APPENDIX A
Ergonomic Risk Factors Examples
[Non-Mandatory]

1. Ergonomic **Risk Factors** are characteristics of a job that contribute to the creation of ergonomic hazards that may negatively impact job performance including quality, productivity, as well as worker health. Section 'C' of the rule required that awareness training covers what are risk factors and how to recognize them.

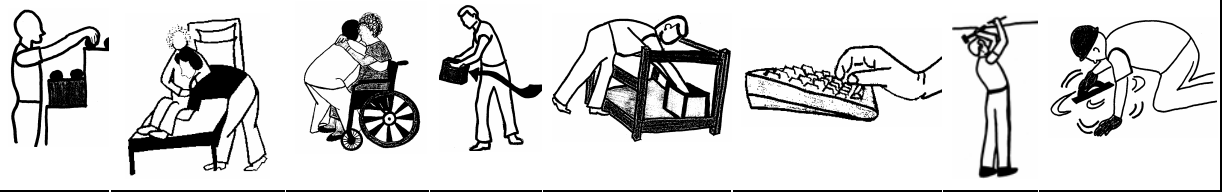
   Work-related **Risk Factors** are present at varying levels for different jobs and tasks. Generally, the greater the exposure is to a single risk factor or combination of risk factors, the greater the probability of a musculoskeletal disorder. The mere presence of a risk factor does not necessarily mean that an employee performing a job is at undue risk of injury.

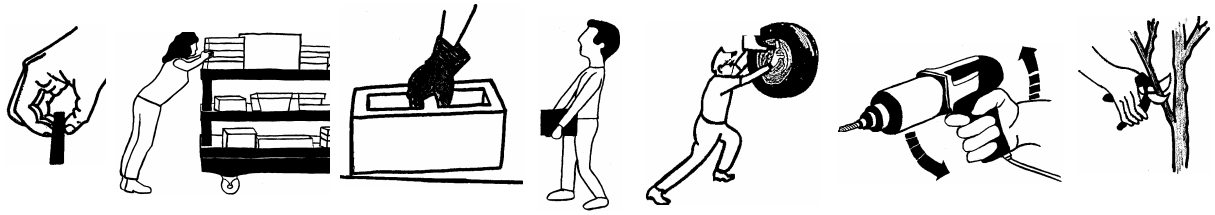
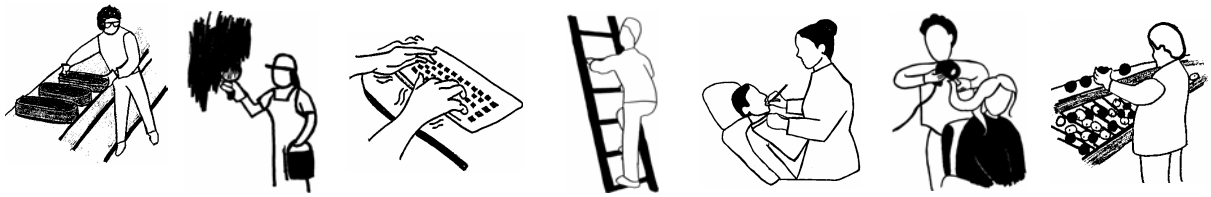
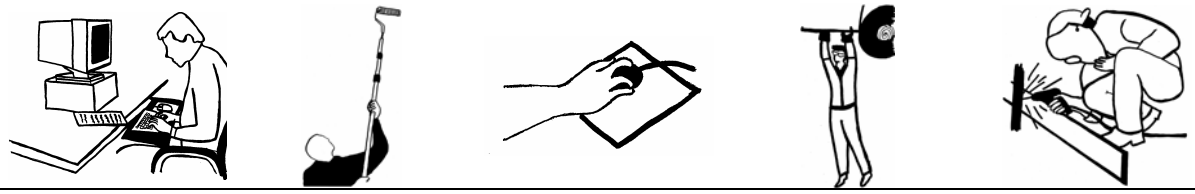
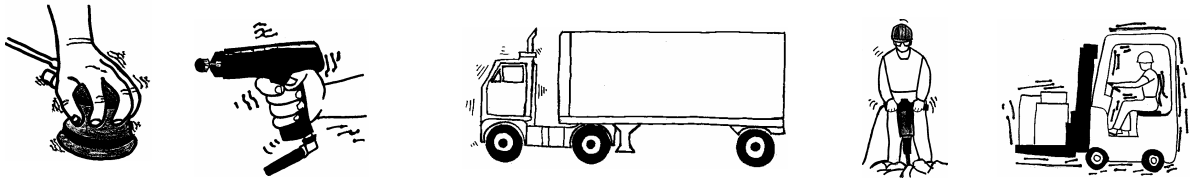
2. For job assessment of ergonomic risk factors consider the following, as described in table 1:
   a. Awkward postures and motions
   b. Forceful exertions
   c. Repetition
   d. Sustained exertions
   e. Vibration
   f. Contact stress
   g. Cold temperature

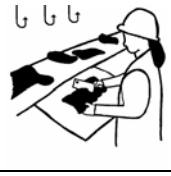
   Risk factors may be evaluated by the following exposure properties:
   h. Duration
   i. Recovery
   j. Magnitude

Table 1

Risk Factor Descriptions With Examples and Exposure Properties

a. Awkward Postures and Motions	Posture is the position your body is in that affects muscle groups and body parts involved in physical activity. Examples of awkward postures and motions include extended reaching, twisting, bending, kneeling, squatting, or working overhead. 

b. Forceful Exertions	Force is the amount of physical effort required to perform a task such as heavy lifting, or to maintain control of equipment or tools. The amount of force required to complete the task depends on the type of grip, the size, shape and weight of an object, posture, and the type of activity. Examples include tasks involving gripping, lifting, carrying, lowering, pushing, pulling, holding, assembling, connecting, using a hand tool, and maintaining control of a powered tool. 
c. Repetition	A motion or activity that is repeated over and over again during a specific time period (e.g. work cycle, shifts). 
d. Sustained Exertions	A body position that is maintained for an extended period of time. 
e. Vibration	The oscillatory motion of an object. Vibration can be described in terms of its frequency, acceleration, and direction of motion. Examples of exposure to vibration include: operating tools such as sanders, grinders, chippers, routers, drills, chain saws and other saws, jackhammers, or sitting/standing on vibrating surfaces such as driving a truck. 
f. Contact Stress	Resting or pressing body parts against a hard surface or sharp edge can result in compression of nerves, muscles, tendons, blood vessels and other tissues. Examples include: pounding with the palm of hand; tools digging into the palm of hand; tools digging into the sides of fingers; resting the knee, elbow, forearm, or wrist on a hard surface or sharp edge. 

g. Cold Temperature	Exposure to low temperatures that impacts the function of specific body parts, primarily hands and fingers. Examples of exposure to cold temperatures include: handling of frozen or refrigerated materials, cold environments, immersion of body parts in cold substances, or cold air exhaust.    
h. Duration	The amount of time a person is exposed to one or more risk factors.
i. Recovery	Periods of reduced exposure to risk factors. These may be rest breaks, pauses in work activity, or motions and exertions that provide specific body parts the opportunity to recuperate.
j. Magnitude	The amount of each risk factor involved. Examples include: the amount of force applied, the angle/position of the back or the repetition rate. **STILL UNDER DISCUSSION**

3. Ergonomic risk factors are present at varying levels for different jobs and tasks. One will need to combine risk factors, as they are present. More detailed assessment needs to be done as required in Section "D" of the rule and it could be begun by using Table 2 or by other methods of assessment, which may be found in Appendix "B" that offers links to further resources.

Table 2
Assessment Formula/Process

Awkward Postures & Motions	+	Forceful Exertions	+	Repetition + Sustained Exertions	+	Vibration + Contact Stress	+	Cold Temperature + Duration	- Recovery = Potential Ergonomic Hazard

Not all Ergonomic Risk Factors must be present to have a Potential Ergonomic Hazard

4. For further assistance in assessing risk factors one may contact MIOSHA, your industry association, or your union contacts, some of which are listed in appendix B.

APPENDIX B
Other Resources Available by Industry
[Non-Mandatory]

State and Federal Assistance

MIOSHA – CET	www.
OSHA	www.
NIOSH	www.

Union Assistance

AFL-CIO – The American Federation of Labor and Congress of Industrial Organizations	www.
General Teamster Union	www.
PACE – Paper-Allied Industry-Chemical-Energy Workers Union	www.
SEIU – Service Employees International Union	www.
UAW – United Auto Workers International	www.
UFCW – United Food & Commercial Workers	www.

Industry Assistance

Hospitals		
	Michigan Health & Hospital Association (MHA)	www.
Nursing Homes		
	Michigan Association of Homes & Services for the Aging (MAHSA)	www
	Health Care Association of Michigan (HCAM)	www.
General Manufacturing		
	Ford Motor Company	www.
	Dow Chemical Company	www.

Delphi	www.
Daimler-Chrysler	www.
Michigan Manufacturers Association (MMA)	www.
Society of the Plastics Industry Inc	www.
Office	
Blue Cross-Blue Shield of Michigan	www.
Haworth, Inc	www.
General Industry	
Michigan Chamber of Commerce	www.
Consumers Energy	www.

University Assistance

University of Michigan – Center for Ergonomics	www.
Western Michigan University	www.